GOVERNMENT OF INDIA
EARTH SCIENCES
LOK SABHA

UNSTARRED QUESTION NO:2474
ANSWERED ON:30.11.2016
Early Warning for Tsunami and Earthquake
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Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether the Government has achieved any success in the field of early warning system for Tsunami and earthquake;
(b) if so, the details thereof;
(c) the funds allocated/spent on carrying out research thereon during the last three years and the current year;
(d) whether the Government proposes to acquire such other system available in the global market; and
(e) if so, the details thereof?

Answer

THE MINISTER OF STATE FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND MINISTRY OF EARTH SCIENCES
(SHRI Y. S. CHOWDARY)

(a-b) Yes Madam. The Indian Tsunami Early Warning Centre (ITEWC), which is based at & operated by Indian National Center for Ocean Information Services (INCOIS), Hyderabad has all necessary infrastructure and capabilities to give tsunami advisories to India as well as to Indian Ocean countries. ITEWC has been designated as one of the Regional Tsunami Service Providers for the entire Indian Ocean Region by the Intergovernmental Oceanographic Commission (IOC) of United Nations Educational, Scientific and Cultural Organization(UNESCO) on 12 October 2011. Since then, ITEWC is providing tsunami warnings and related services to all countries in the Indian Ocean Rim (24 Countries) beyond fully serving the India's coastline / Islands. The centre is capable of detecting tsunamigenic earthquakes occurring in the Indian Ocean as well as in the Global Oceans within 10 minutes of their occurrence and disseminates the advisories to the concerned authorities within 20 minutes through email, fax, SMS, Global Telecommunication System (GTS) and website.

The ITEWC consists of national and international observational network of seismic stations, sea level gauge stations and tsunami buoys around the Indian and Pacific Oceans. Data from approximately 400 seismometers is being received in real-time and processed automatically to detect an earthquake of magnitude 4.0 and above anywhere on the globe. As soon as the earthquake is detected, warning centre transmits the first bulletin based on seismic data describing the location of earthquake, its magnitude, depth and other characters of the event. After issuing the first bulletin, seismic data are further analysed to improve the accuracy of earthquake parameters (magnitude, depth and location). The processing of seismic data is optimized to detect and characterize large earthquakes within earliest possible time.

A pilot project on Earthquake Early Warning (EEW) system is on implementation for northern India (Uttarakhand) by Indian Institute Of Technology (IIT) Roorkee which is funded by the Ministry of Earth Sciences (MoES). The system is under testing by IIT Roorkee. Such type of system gives a time lead for issue of warning on occurrence of an earthquake, so that some remedial actions regarding vacating building, shutting down critical operations etc may be taken up.

Having said that, it is appropriate to mention that so far earthquake prediction is not developed anywhere in the world with precise degree of accuracy with respect to time, space and magnitude.

(c) The funds allocated/spent by Tsunami Early Warning Systemon carrying our research thereon during the last three years and the current year is as under;

2013-14		2014-15		2015-16		2016-17 up to 23.11.2016	
Budget	Expenditure	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure
30.14	14.35	15.29	13.97	15.29	21.53	15.29	9.45

Under EEW, against the total allocated funds of Rs. 3.75 Cr, an amount of Rs. 2.41 Cr has been released to IIT Roorkee.

(d-e) There is no proposal to acquire other systems available in the global market, but equipments are being acquired for the refinement of Tsunami warning criteria and that is an ongoing process. The recent Japan Tsunami of March 2011 has brought out important issues that have to be addressed for improving the accuracies of tsunami warning systems. The new research techniques such as Water level inversion, real-time inundation modeling, real-time estimation of focal mechanism of earthquake to show the style of faulting and incorporation of global navigation satellite system (GNSS) data into the warning chain are the few key issues that ITEWC has taken up on priority. All these will enable more informed decisions on evacuation, as well as to eliminate the potentially dangerous false evacuations.